CLAIMS

What is claimed is:

1. A semiconductor device system configured for electrical connection to external circuitry, the semiconductor device system comprising:

a carrier substrate; and

a semiconductor device secured and operably coupled to the carrier substrate and including:

a semiconductor substrate having active circuit devices thereon; and

an on-chip capacitor including at least a portion thereof being formed in an active area of the semiconductor substrate, the on-chip capacitor being operably coupled between the active devices and the carrier substrate to provide filtering capacitance for the semiconductor device.

2. A semiconductor device for operable connection to a carrier substrate, the semiconductor device comprising:

a semiconductor substrate;

active circuit devices on the semiconductor substrate; and

a capacitor having at least a portion thereof formed in an active area of the semiconductor substrate, the capacitor being operably coupled to the active circuit devices to provide filtering capacitance for the semiconductor device when the semiconductor device is operably connected to a carrier substrate.

3. A semiconductor device for operable connection to a carrier substrate, the semiconductor device comprising:

a regulator circuit for receiving an electrical power signal;

a semiconductor substrate;

active circuit devices on the semiconductor substrate; and

an on-chip capacitor having at least a portion thereof formed in an active area of the semiconductor substrate, the on-chip capacitor being operably coupled to the regulator circuit and operably coupled to the active circuit devices to provide filtering capacitance for the semiconductor device.

4. The semiconductor device of claim 3, wherein the on-chip capacitor comprises a planar-type capacitor.

5. The semiconductor device of claim 3, wherein the capacitor includes a first node and a second node, one node comprising a poly layer and the other node comprising a channel.

6. A semiconductor die assembly configured for connection to external circuitry, the semiconductor die assembly comprising:

a carrier substrate configured for providing power and ground for at least one semiconductor die operably connected thereto; and

at least one semiconductor die operably connected to the carrier substrate and including:

a semiconductor substrate having active circuit elements formed on an active area thereof; and

at least one capacitor on the semiconductor substrate, at least a portion of the at least one capacitor being formed on the active area, the at least one capacitor being operably coupled to the active circuit elements to provide filtering capacitance for the at least one semiconductor die.

7. A semiconductor device for connection to a carrier substrate configured to provide power and ground thereto, the semiconductor device comprising:

a semiconductor substrate having active circuit elements formed on an active area thereof;

at least one capacitor on the semiconductor substrate, at least a portion of the at least one capacitor being formed on the active area, the at least one capacitor operably connected to the active circuit elements to provide filtering capacitance therefor when the semiconductor device is operably connected to power and ground of the carrier substrate.

8. A semiconductor device for connection to a carrier substrate configured to provide power and ground thereto, the semiconductor device comprising:

a semiconductor substrate having active circuit elements formed on an active area thereof;

at least one regulator circuit for receiving power; and

at least one capacitor on the semiconductor substrate, at least a portion of the at least one capacitor being formed on the active area, the at least one capacitor being operably coupled to the at least one regulator circuit and to the active circuit elements to provide filtering capacitance for the active circuit elements when the semiconductor device is operably connected to power and ground of the carrier substrate

9. The semiconductor device of claim 8, wherein the at least one capacitor comprises a planar-type capacitor.

10. The semiconductor device of claim 8, wherein the capacitor includes a first node and a second node, one node comprising a poly layer and the other node comprising a channel.